

***EDUCATION & TRAINING
PLAN
FOR MINERAL MINING***

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EXECUTIVE SUMMARY

The Virginia Department of Mines, Minerals and Energy (DMME), Division of Mineral Mining (DMM), is offering a comprehensive, quality, results-oriented education and training service for its customers in the mineral mining industry under the Virginia Mine Safety Act of 1994.

The Education and Training (E&T) Plan is based on a survey of mineral mining customers in fall 1994. Almost 400 people, in eight different customer groups, offered their views on how the DMM could improve and expand upon its education and training service.

Most customers, including mine operators, safety and environmental directors, contractors, corporate executives, and workers said they want the DMM to continue providing training traditionally offered to the industry. This includes general mine safety, first aid, annual refresher, new miner training, compliance with law and regulations, and land reclamation practices. In addition, they would like new offerings related to the environment, skills' development and management. Customers suggested the DMM present the information using audio-visuals and hands-on demonstrations with discussion.

How can the effectiveness of education and training services be measured? All of the customer groups said they'd expect to see reductions in accidents and increases in worker knowledge and productivity. Lower workers' compensation rates, less down time, and reduced operating expenses were also mentioned, along with good participation and positive feedback from employees.

Customers said they were willing to commit to participating in training an average of two days per year, with a preference for scheduling it in slower production months at or near the mine. Most respondents also voiced a willingness to pay for quality education and training.

Lastly, customers expressed interest in continuing to use DMM services, especially if the DMM strengthens the current Education and Training Service by using site-specific training, new materials and teaching methods, and train-the-trainer programs to support company instructors.

Based on these responses, the DMM developed the following goals for the Education and Training Service:

- I. Eliminate accidents, injuries and fatalities, and their corresponding costs.
- II. Promote sound environmental practices at mineral mines.

III. Enhance the education and training opportunities in the mineral mining industry.

IV. Effectively administer the Education and Training Plan and Service for customers of the DMM.

The DMM is formulating new offerings and services, and expanding and improving existing training to implement these goals. This includes enhancing Mine Safety and Health Administration (MSHA) required training, courses for initial certification and renewal (in accordance with the Virginia Mine Safety Act), general mine safety, and other education and training requested by customers. New and expanded services include information and consulting on environmental issues; mined land reclamation and safety for operators, workers and contractors; mine safety analysis; referrals to community resources; and pretraining assessment and post training evaluation.

The new E&T Service is being publicized through a marketing campaign to keep customers and stakeholders informed and garner their support. This will involve reporting the results of the Needs Assessment Survey, communicating information about the service once it is underway, and providing the results of the evaluation to customers.

The evaluation will help the Division to measure its success and to modify the service as needs dictate. Operators will be asked to provide specific information to DMM, which will be combined with Division data, so that DMM can determine the cost-effectiveness of training at individual mines and of the service as a whole. In this way, DMM will be able to conduct a performance-driven evaluation and provide a quality service for its customers.

INTRODUCTION

The recommendations of the Joint Subcommittee Studying the Virginia Mine Safety Law of 1966 served as a catalyst for the development of the new Education and Training (E&T) Service. The Subcommittee recommended that the 1994 General Assembly expand the training and technical assistance to mine operators currently provided by the Commonwealth.

Specifically, it recommended that the Department of Mines, Minerals and Energy (DMME), Division of Mineral Mining (DMM), develop a voluntary state-approved curriculum and teaching materials, and provide training paid from funds provided to the agency. They also said DMM was to continue to provide voluntary on-site safety awareness training as part of mine inspections and general safety talks. Further, its report, House Document 86, stated that DMM should help with new miner and refresher training required by the federal Mine Safety and Health Administration (MSHA) and provide classes and training needed by miners to obtain and maintain certification.

The DMME developed guiding goals for the Education and Training Service which were incorporated in the agency's strategic plan. This was part of the ongoing assessment called for by the strategic plan and served to implement the new mandate. The service is to be:

- Site-specific, with DMM professionals working in partnership with customers to formulate training strategies for them;
- Tailored to the assessed needs, expectations, and skill/training requirements of DMM customers;
- Flexible in design and delivery;
- State-of-the-art in content and presentation; and
- Continuously evaluated and updated to reflect changes and needs in technology, in law and regulations, and in the mineral mining industry.

The DMM Education and Training Team was convened to plan the new service. The team established values and principles for dealing with customers within and outside the agency. They are to:

- Provide effective, quality training in a timely and efficient manner.
- Be sensitive and attentive to the needs of our customers.
- Support each other in providing services to our customers.

- Communicate effectively with customers, stakeholders and other DMM staff.
- Go beyond normal expectations to provide services in education and training.
- Operate with a high degree of knowledge and professionalism.

DMM is committed to incorporating these goals, principles, and values into the implementation of the Education and Training Service.

GOALS AND OBJECTIVES

I. Eliminate accidents, injuries and fatalities, and their corresponding costs.

- A. To provide training required by the Federal Mine Safety Act.
- B. To provide training for persons seeking to obtain and maintain certification.
- C. To improve customer knowledge and awareness of the hazards on mine sites and provide other traditional training requested by customers (not mentioned in A. and B.).

II. Promote sound environmental practices at mineral mines.

- A. To improve the environmental knowledge and awareness of customers.
- B. To provide services that encourage cost-effective environmental compliance.

III. Enhance the education and training opportunities in the mineral mining industry.

- A. To help customers in obtaining nontraditional education and training from external sources.
- B. To provide quality, customized education and training services on-site, to all customers requesting them.

IV. Effectively administer the Education and Training Plan and Service for customers of the DMM.

- A. To evaluate continuously and update the service to reflect changes in technology, law and regulations, and the needs of the mineral mining industry.
- B. To provide for professional staff development.
- C. To ensure sufficient resources are available.
- D. To evaluate DMM's marketing efforts.

EDUCATION AND TRAINING METHODOLOGY

The DMM's E&T Service is based on a systematic planning process which draws on the expertise of staff and the expressed needs of customers. To develop the Service, a team was created and a consultant employed to help structure the planning process. The team consisted of four Mine Inspectors, two Mine Inspector Supervisors, the Technical Instruction Supervisor, the Division Director, a Policy Analyst, and the Public Relations Coordinator, with other agency staff being involved at critical junctures in the planning process.

The team established leadership roles and developed assumptions and values, to guide them in planning the service:

- Process and content leaders were selected as well as a scribe to take minutes.
- Subcommittee leaders communicated problems directly to the process leader and agenda items to the team leader.
- Members made the meetings and work of the committee a priority.
- A meeting schedule was established in advance, with agendas distributed prior to the meeting, and minutes distributed afterwards.
- Highlights of meetings were distributed to all DMM staff.
- Status reports were provided to DMME management through informal, verbal reports, the DMM monthly report, and at key decision points.
- Reports to customers and stakeholders on the E&T Plan would be made through existing communication mechanisms, e.g., Mineral Mining Bulletin, VAA newsletter, and thank you letters to workshop participants.
- Decisions were made by consensus and silence interpreted as agreement.
- All DMM staff participated and assisted with strategies and plans for marketing the service.
- The committee would end as a planning committee by Summer 1995, when the report is complete and implementation begins.

The team collected background information to assist them in planning the service, including materials on training programs in other states and data on customer needs and preferences. They developed parameters for a more in-depth and expansive assessment, identifying customers and stakeholders by category:

- Small Mine Operators
- Large Mine Operators
- Independent Contractors
- Upper Management/Executives
- Safety/Training/Environmental Directors
- Mine Workers
- Stakeholders (visitors/agencies)

Questions were devised to determine the education and training needs of each group. The topical areas for questions were:

- Training Subjects.
- Format.
- Beneficiaries of Training.
- Current Strengths and Weaknesses of DMM.
- Measures of Effectiveness.
- Logistics and Cost.

DMM staff interviewed customer and stakeholder groups using the survey questions, then the E & T team compiled and evaluated the results. The information was evaluated to identify the overall needs of the industry and the specific needs of individual customer groups. Findings and conclusions were developed from this information as shown in Appendices A - H.

Development of Professional Development Plan

The team broke into committees to develop various components of the plan. The technical instructor supervisor and mine inspector supervisors worked on a Professional Development Plan (PDP) so that DMM staff would have the needed knowledge and ability to implement the plan. This was presented to the entire E&T team for review, editing, and approval. Then the PDP was implemented with courses selected and scheduled for each staff member.

Development of Curriculum

To develop the curriculum and services, the Team reviewed and evaluated federal and state training and certification requirements, training programs in other states, the results of the customer needs assessment, and the current offerings of DMM. This analysis enabled staff to create course outlines for certification classes, MSHA Part 48 training, general mine safety, first aid, and

other DMM offerings and services. Once the framework for the courses was created, committees developed course descriptions, objectives, and lesson plans.

CUSTOMER NEEDS ASSESSMENT AND SUMMARY OF FINDINGS

Eight groups and 382 individuals were included in the DMM survey:

- Small Mine Operators (<10 employees) - 60.
- Large Mine Operators - 59.
- Speciality Mines - 13.
- Safety and Environmental Directors - 16.
- Independent Contractors - 14.
- Corporate Executives - 5.
- Miners and Workers - 215.
- Stakeholders - 4.

Education and Training Topics Requested

Small Mine Operators: general mine safety, first aid, mobile equipment operation, topics related to business management and the environment.

Large Mine Operators: general mine safety, annual refresher, first aid and new miner.

Speciality Mines: general mine safety, first aid, human resource management, and topics on the environment.

Safety and Environmental Directors: annual refresher, new miner, first aid, hazard communication and environmental topics.

Independent Contractors: Virginia Mineral Mining Act and regulations specific to their jobs on the mine sites, first aid, and hazard training.

Corporate Executives: new miner, annual refresher, certification courses, first aid, general mine safety, human resource development and management, and train-the-trainer courses and materials.

Miners and Workers: general mine safety, first aid, personal development, safety and health and environmental regulations pertinent to their jobs.

Training Format and Appearance of Instructors

All customer groups wanted information to be presented through use of audio-visuals and hands-on demonstration with discussion, supported by appropriate equipment and technology.

Respondents said this was especially important for customers who are illiterate or have low comprehension. Preassessment of customers prior to training will enable trainers to better address these needs.

Instructors should be knowledgeable of the subject, friendly and open, and appear casually and neatly dressed, and should speak so as to be understood by their audience, avoiding jargon.

Beneficiaries of Training

Respondents said everyone within the company would benefit from training. All groups said contractors working on-site would benefit. Large operators said mine customers that do business at the mine would benefit. Speciality mines cited the benefits of training for local fire and rescue personnel.

Measures of Effectiveness

All customer groups said a reduction in accidents and an increase in worker knowledge and productivity would be measures of service effectiveness. Speciality mines, safety directors, and executives also mentioned lower workers' compensation rates, less down time, and reduced operating costs as good measures of training effectiveness.

Other means of measuring a successful program mentioned were well-prepared instructors, quality materials directly relevant to work, lots of participation, and positive employee feedback. Contractors suggested training would be most beneficial if it were work specific.

Logistics

Customers said they were willing to commit to an average of two days per year per worker. All groups indicated a minimum of one day per year for each worker. Speciality mines suggested more time be made available for supervisory training.

Overall, the time of year preferred for training was during the slower production months (winter and early spring) for those who expressed an opinion. Most customers said training could be scheduled at any time.

Most respondents said training should be held on-site or near the mine. Contractors said their office would be the best location for their training and not the mine site, with regional certification classes the exception.

Fees for Service

Most customers voiced a clear willingness to pay for quality education and training services. On average, customers said they would pay \$50 per person; but the range varied greatly based on the type of training offered, from \$10 to \$200 per person for a professional-level course.

When asked what sources are used now for education and training, the most frequent response was that the DMM was the primary source for materials and presentations. Customers used materials produced by MSHA and DMM for in-

house presentations; and vendors, contractors, and other state agencies were relied upon as resources to varying degrees.

When asked how the DMM can support or strengthen its current Education and Training Program, customers wanted to continue using DMM services as it expands and improves its offerings. Contractors expressed an interest in using DMM services for their education and training. Most customers wanted site-specific presentations, new materials and teaching methods, and train-the-trainer programs to support their instructors.

Stakeholders

DMM surveyed a training specialist at MSHA, staff at the Virginia Marine Resources Commission (VMRC), the Army Corps of Engineers and the Virginia Department of Environmental Quality to ask if they had suggestions for new or modified services. Agency staff all suggested continuing cooperation between the agencies. MSHA recommended that training materials and statistics be current and site-specific and that DMM share information on accidents and violations.

In addition, DMM asked a quarry operator for information on services which might be helpful to his customers. He suggested that DMM begin a certified blaster's training program for small road contractors who do secondary highway work, a safety program for general and dump truck drivers, a certified flagman program, and assistance to quarries in developing noise and dust control programs.

Conclusions

Customers were interested in expansion and modification of traditional education and training currently offered. This training includes general mine safety, first aid, annual refresher, new miner training, compliance with law and regulations, and environmental and land reclamation practices.

New nontraditional (for DMM) areas of interest requested were skills development, human resources, and business management. The survey findings and conclusions may be found in Appendices A - K.

SERVICE STRATEGIES

Service strategies implement the goals and objectives of the Education and Training Service. Each training course or service flows from the goals and objectives.

Training Courses and Other Services

GOAL NO. 1

Eliminate accidents, injuries and fatalities, and their corresponding costs.

Objective A. To provide training required by the Federal Mine Safety Act.

MSHA required training:

1. Annual Refresher
2. New Miner
3. General Instructor

Objective B. To provide training for persons seeking to obtain and maintain certification.

Certification Courses:

1. Surface Foreman
2. Surface Foreman - Open Pit
3. Underground Foreman
4. Surface Blaster
5. Underground Blaster
6. Mineral Miner
7. Basic First Aid

Certification Renewal Courses:

1. Foreman
2. Blaster

Objective C. To improve customer knowledge and awareness of the hazards on mine sites and provide other traditional training requested by customers (not mentioned in A. and B.).

General Mine Safety Courses:

1. Ground Control

2. Mobile Equipment
3. Explosives/Blasting Safety
4. Travelways
5. Electrical Safety
6. Personal Protection and Safety Awareness
7. Stationary Equipment Safety
8. Mining and Personal Health

Other Courses:

1. Hazard Communication
2. Emergency Response Plan
3. Emergency Response Plan Implementation
4. Hazardous Materials Awareness and Operations
5. Blood-borne Pathogens Awareness

Services:

1. Mine Safety Analysis
2. Information on safety and reclamation for workers and contractors.

GOAL NO. 2

Promote sound environmental practices at mineral mines.

Objective A. To improve the environmental knowledge and awareness of customers.

Services:

1. Information and Consulting on Environmental Issues
2. Mined Land Reclamation Information and Consulting
3. Information on safety and reclamation for workers and contractors.

Objective B. To provide services that encourage cost-effective environmental compliance.

Services:

1. Information and Consulting on Environmental Issues
2. Mined Land Reclamation Information and Consulting
3. Information on safety and reclamation for workers and contractors.

GOAL NO. 3

Enhance the education and training opportunities in the mineral mining industry.

Objective A. To help customers in obtaining nontraditional education and training from external sources.

Referral to External Services

Objective B. To provide quality, customized education and training services on-site, to all customers requesting them.

Educational and Training Assessment Service

GOAL NO. 4

Effectively administer the Education and Training Plan and Service for customers of the DMM.

Objective A. To evaluate continuously and update the service to reflect changes in technology, law and regulations, and the needs of the mineral mining industry.

Objective B. To provide for professional staff development.

Objective C. To ensure sufficient resources are available.

Objective D. To evaluate DMM's marketing efforts.

Summary of Course Descriptions

MSHA Required Training

Annual Refresher: Course follows the MSHA-approved training plan and is taught by a MSHA-certified instructor. This course is taught on-site in cooperation with the operator and company training staff, when possible, and is in keeping with the operator's site-specific training plan. The 5000-23 form is signed and maintained by the company official, verifying the company's training plan was followed.

Requirements: The mine site must have in place an MSHA-approved training plan for the course to be conducted by DMM personnel. The plan must be made available to the instructor prior to the course so site-specific information can be prepared.

Course Length: 8 hours

Location: provided on-site

New Miner: Course is designed to prepare the new employee to work on a surface mineral mine site. New miners receive 16 hours of training by DMM instructors in miners' rights, self-rescuer and respiratory devices, entering and leaving the mine, transportation systems, communication systems, introduction to the work environment, ground control, housekeeping, and other MSHA required courses. An eight-hour mine specific introduction to the work place, hazard recognition, and health and safety aspects of specific tasks will be provided by the mine operator.

Requirements: Mine site must have in place an approved MSHA Part 48 training plan. Participants must be employees of the mine and a 5000-23 form must be signed and maintained by a company official. The company must provide the additional eight hours of site-specific training necessary to comply with Part 48.

Course Length: 16 hours (24 hours required by MSHA)

Location: provided on-site

General Instructor: MSHA-certified Instructor-Trainers will review the fundamentals of instruction, preparing lesson plans and objectives, and other related issues. The applicant will prepare and present a 15-minute safety and health presentation, which will be videotaped. The class reviews the video and provides feedback on platform and presentation skills. Once the course is completed, the Instructor-Trainer submits recommendations and resumes to the MSHA-Pittsburgh office for evaluation and certification. When certified, the new instructor is approved to teach MSHA New Miner, Annual Refresher, and task

training programs for the mining industry, following Part 48 requirements. This course does not certify applicants for teaching the MSHA First Aid.

Requirements: Prior to attending the class, all applicants must submit a resume to DMM which describes the instructional experience and type mine work performed and their corresponding time periods. The resume must show that they have the knowledge and skills necessary to provide the level of training they will be conducting. Also, the applicant's employer must demonstrate support for his or her application for certification. Each applicant must be prepared to provide a 15-minute presentation after the completion of the first day of class for presenting on the second day. Materials are provided for preparing overheads, using videos, and other audio-visuals.

Course Length: 24 hours

Location: various locations statewide

Certification Courses

New certification requirements are being considered by the Virginia Board of Mineral Mining Examiners and will become effective in January 1996 or soon thereafter. The requirements described herein are in accordance with the Virginia Mine Safety Act and the Certification Requirements for Mineral Miners and are to be used until the new regulations take effect.

Surface Foreman: Course prepares the applicants to assume responsibility for compliance with law and regulations, resolving legal issues, supervision, ensuring the safety and health of workers, and environmental issues. An examination is given at the end of the course.

Requirements for Certification: Five years surface mining-related experience; a current, basic first aid certificate (provided with the course, if needed); completion of Board of Mineral Mining Examiners forms and a \$10 examination fee paid for each examination attempt; and pass examination with at least 85% on each of four sections. Applicants may be given three years credit toward the work experience requirement for a degree in mining engineering or civil engineering or two years credit for a degree in mining technology or civil technology.

Course Length: 24 hours (including 8-hours of first aid first day)

Location: various locations statewide throughout the year

Surface Foreman - Open Pit: Course prepares the applicant for taking the certification examination and is similar to the Surface Foreman class. It is designed for an applicant working at a mining operation that does not perform or contract any on-site blasting or handle, transport or store explosives. The examination is given at the end of the course.

Requirements for Certification: Pass the examination with at least 85% on each of three sections; all other requirements are the same as Surface Foreman above.

Course Length: 20 hours (including 8-hours of first aid the first day)

Location: various locations statewide throughout the year

Underground Foreman: The applicant will attend surface foreman classes and review all law and regulations pertaining to underground mineral mining.

Requirements for Certification: Five years underground mining related experience; a current, basic first aid certificate (provided with the course if needed); completion of Board of Mineral Mining Examiners forms and a \$10 examination fee paid for each examination attempt; and pass examination with at least 85% on each of four sections. All other requirements are the same as Surface Foreman above.

Course Length: 24 hours (including 8-hours of first aid the first day)

Location: various locations statewide

Surface Blaster: Course prepares the applicants for the certification examination. It is for applicants who already possess knowledge and skills in surface mine blasting. It emphasizes the blaster's responsibilities in performing blasting duties safely and in compliance with the Mine Safety Act and the Virginia Safety and Health Regulations. The class covers storage, transportation, and use of explosives on a mine site, and electric and nonelectric systems. The exam is given at the end of the course.

Requirements for Certification: At least one year of mine-related blasting experience under the direct supervision of a certified blaster; current MSHA 5000-23 form, showing review of first aid; completion of Board of Mineral Mining Examiners forms and a \$10 examination fee paid for each examination attempt; pass the examination with at least 85% on each of four sections.

Course Length: 24 hours

Location: various locations statewide throughout the year

Underground Blaster: Course prepares applicants for the certification examination. It *is* for underground blasting applicants who already possess knowledge and skills in mine-related blasting. This emphasizes the blaster's responsibilities in performing blasting safely in compliance with the Mine Safety Act and the Virginia Safety and Health Regulations governing storage, transportation, and uses of explosives on a mine site. The examination is given at the end of the course.

Requirements for Certification: Two years underground mine-related work experience, with at least one year of the two performing blasting duties underground; all other requirements same as Surface Blaster.

Course Length: 16 hours

Location: various locations statewide throughout the year

Basic First Aid: Course includes recognition and treatment of life-threatening emergencies, fractures, burns, poisoning, environmental emergencies, and particular injuries. This course fulfills the first aid requirements for certified foreman, which must be renewed every three years, and is also open to all other mineral miners when space is available.

Requirements for Certification: No prerequisites.

Course Length: 8 hours

Location: various locations statewide throughout the year

General Mineral Miner: Course prepares the applicants for certification as a general mineral miner. This certification is required of all persons hired to perform mining tasks after January 1, 1996. It covers first aid and highlights of the Virginia Mine Safety Act and the Safety and Health Regulations for Mineral Mining. Applicants must demonstrate a fundamental knowledge of first aid and the law and regulations prior to commencing work in a mine.

Requirements for Certification: No prerequisites for experience in the mining industry required. Any person hired by a mining company in Virginia may take the course and demonstrate knowledge of the topics.

Course Length: 8 hours minimum

Location: various locations statewide throughout the year

Certification Renewal Courses

Effective July 1994, each certification with the exception of the General Mineral Miner, is required to be renewed every five years. Each course listed is to prepare the certified person for renewal of the certification held. The Board of Mineral Mining Examiners is considering allowing a certificate holder to take the appropriate certification renewal course or challenge the renewal examination.

Foreman Certification Renewal Course: Provides a refresher in the Virginia Mine Safety Act and the Safety and Health Regulations for Mineral Mining. This course is for persons already certified and working as foremen.

Course Length: 8 hours

Location: various locations statewide throughout the year

Blaster Certification Renewal Course: Provides a refresher in the Virginia Mine Safety Act and the Safety and Health Regulations for Mineral Mining. This course is for persons already certified and working as a blaster on a mineral mining site.

Course Length: 8 hours

Location: various locations statewide throughout the year

General Mine Safety Courses

These courses, conducted on the mine site, range in length from 30 minutes to eight hours, depending on the subject matter, and are scheduled at the request of the operator. The instructor will perform a pretraining assessment with the operator and develop site-specific audio-visual materials appropriate for the site and topic. See Appendix I for the lesson plans or each course description.

Ground Control: Course gives the participant general knowledge of hazards involving ground control. Designed for mineral miners and other interested persons, the course may cover regulations governing ground control, site-specific hazards and conditions, factors affecting ground control, and accident review. The effects of mining methods, geology, blasting, seasonal changes, and weather may also be discussed. Participants should bring writing materials and appropriate personal protective equipment to the class.

Course Length: 30 minutes to 2 hours

Mobile Equipment Safety: Course gives the participant general knowledge in mobile equipment safety that is specific to the equipment used on the mine site. It is intended for mobile equipment operators, trainees, and maintenance personnel. It includes a review of pertinent regulations and describes the required preshift inspection, record-keeping, maintenance of equipment, the limitations and proper use of equipment, safety hazards and safe operating procedures, and accident review. Participants may need access to mobile equipment and should bring appropriate personal protective equipment.

Course Length: 1 to 8 hours

Explosives/Blasting Safety: Course will familiarize participants with the general hazards associated with explosives and blasting on the mine site. Intended for mineral miners and other interested persons, the course may include a review of regulations, proper handling and storage of explosives, general blasting safety, blasting problems associated with mining, and accident review. Participants will learn to recognize hazards and how to work safely around explosives. Participants should bring writing materials and appropriate personal protective equipment to the class.

Course Length: 1 to 8 hours

Travelways: Course provides participants with general knowledge of travelway safety and specific hazards of the work environment. Intended for mineral miners and other interested persons, the course may include regulations governing travel areas, housekeeping and maintenance of walkways, ladders, elevated ramps and other travelways, site-specific hazards and conditions, and accident review. Participants should bring writing materials and personal protective equipment to the class.

Course Length: 30 minutes to 2 hours

Electrical Safety: Course will familiarize participants with hazards associated with electrical equipment, electrically-operated equipment, and electrical circuits. Designed for mineral miners and other interested persons, the course may include regulations governing electricity, principles and hazards of electrical circuits and equipment, lock-out/tag-out procedures and proper grounding, site-specific hazards, and accident review involving electrical equipment. Writing materials and personal protective equipment for each participant may be needed during class.

Course Length: 30 minutes to 4 hours

Personal Protection and Safety Awareness: Course will provide participants with general knowledge of the proper use of personal protective equipment and personal safety hazards. Designed for mineral miners and other interested persons, the course will include a review of pertinent regulations on personal protective equipment; proper use of equipment, lifting techniques and ergonomics; safety awareness in the workplace; and a review of accidents involving personal protective equipment. Participants will need to bring basic personal protective equipment and writing materials to class.

Course Length: 1 to 2 hours

Stationary Equipment Safety: Course provides participants with general knowledge of the hazards associated with stationary equipment used on the mine site. Intended for mineral miners and other interested persons, available modules include regulation review related to stationary equipment, proper guarding techniques, site-specific hazards and conditions associated with the equipment, and review of pertinent accidents involving stationary equipment. Participants will need to bring writing materials and personal protective equipment with them to class.

Course Length: 1 to 8 hours

Mining and Personal Health: Course provides a review of major health issues related to mining. It covers the health hazards which may result from exposure to silica dust and excessive noise and recommends ways that one can secure the

needed protections to prevent injuries, e.g., changes in engineering and use of personal protective equipment. Intended for all mineral mining personnel. Writing materials and personal protective equipment may be needed for class.

Course Length: 30 minutes to 1 hour

Other Courses

Hazard Communication: Course provides an understanding of material safety data sheets (MSDS), employee right-to-know laws, and labeling of hazardous chemicals. Designed for every employee to encourage personal safety and health in handling chemicals on-site.

Course Length: up to 4 hours

Location: provided on-site at operator's request

Emergency Response Plan: Course designed for the front-line supervisor and upper management. Topics include importance of a response plan, benefits of the planning process, components of a plan, and exercises in developing and updating a plan. Other topics include the importance of good communication between responding agencies, legal authority on the scene, media relations, and implementing the plan.

Course Length: 8 - 12 hour workshop

Location: provided at DMM office

Emergency Response Plan Implementation: This course reviews the mine site's existing emergency plan with the employees, discusses how and why the plan was developed, and how it will be implemented in the event of an emergency. This is a site-specific program requiring a mine site to have an existing plan in place.

Course Length: approximately 2 hours

Location: provided on-site at operator's request

Hazardous Materials Awareness and Operations (HAZWOPER): Follows the outline developed by the International Society of Fire Service Instructors. Topics include basic defensive identification and recognition of hazardous materials spills or leaks, use of material safety data sheets, and proper responses to ensure personal safety when a spill or release occurs. This is designed to increase awareness among employees of basic hazards and meets the OSHA 29 CFR 1910.120 standard.

Course Length: 8 hours

Location: provided at DMM office

Blood-borne Pathogens Awareness: Course introduces the attendees to the hazards of blood-borne pathogens and is appropriate for any employee that has knowledge of first aid. Topics include a definition of pathogens, how they are spread, their dangers and hazards, and universal precautions to take, e.g., personal protective equipment, when exposed to blood-borne pathogens.

Course Length: up to 2 hours

Location: provided on-site at operator's request

Services

Environmental Services

DMM staff is available to provide information and assistance to the mineral mining industry in the areas of:

- Handling of solid wastes;
- Proper disposal of hazardous wastes and materials;
- Wetlands establishment and protection;
- Underground storage tanks;
- Department of Environmental Quality, Department of Health, Marine Resources Commission, and Corps of Engineers applications;
- Air and water quality; and
- Material recycling.

DMM field staff will conduct on-site assessments to assist in resolving environmental problems. The staff will also coordinate with responsible agencies.

Mined Land Reclamation Services

DMM staff is available to assist the mineral mining industry in implementation of efficient and cost-effective methods of meeting the reclamation requirements of Chapter 16, Title 45.1 of the Code of Virginia. Such assistance may be in the areas of:

- Permit application, amendment, and renewal preparation;
- Regulatory compliance;
- Mine planning and operation;
- Post mining land use;

- Erosion and sediment control; and
- Regrading and revegetation.

Assistance will be provided by DMM field and technical support staff. Coordination with other local, state, and federal agencies may also be provided upon request.

Mine Safety Analysis Service

The DMM staff, in cooperation with the mine operator, will provide an analysis of mine safety at the participant's mine site. Mine safety analysis, the process used to improve employee safe work habits and workplace safety, may include the analysis of the following:

- Company accident trends;
- Records and record-keeping procedures;
- Site conditions;
- Observations of work practices;
- Interviews with workers and supervisors;
- Identification of workplace hazards;
- Recommendations for changes in work practices; and
- Evaluation of barriers to safe work practices.

The DMM staff will assist the operator in identifying the workplace activities, identifying the hazards associated with each activity, and developing recommendations to eliminate the hazards identified.

Education and Training Assessment Service

DMM training staff is available to provide site-specific assessments of education and training needs before conducting training or providing services at mining operations. The assessment can address overall education and training needs for a site or may relate to a specific need of the operator. The assessment includes:

- Interviews with company officials;
- Interviews with employees;
- Review of site accident history;
- Review of site violation history;
- Evaluation of national accident trends related to on-site activities to be addressed in training;
- Review of DMM Risk Assessment Program;
- Review of specific on-site equipment/operations to be addressed in training;
- Determination of the number of employees to participate in training;
- Assessment of company training resources including facilities, personnel, and equipment; and
- Possible training schedules.

Upon completion of the assessment, a proposed lesson plan for education and training will be developed, including course outlines, time, and facility requirements. This plan will be reviewed with the company officials for modification and approval.

Referral to External Services

There are a number of specialized courses and services that may be desired by operators and miners. The DMM staff can assist the industry in making contact with groups that can give professional services in the following areas:

- Resource management;
- Small business management;
- Literacy programs; and
- Drug/Alcohol abuse assistance programs.

DMM staff is also available to develop nontraditional courses and special materials for workers and contractors on such topics as mine hazards and safety and reclamation practices on mineral mines. These may include:

- Newsletters;
- Accident abstracts;
- Hazard alerts; and
- Communication Memorandums.

Training Resources

Internal Training Resources

The DMM has nine mine inspectors and two mine inspector supervisors who conduct education and training. Approximately 25 percent of their time is devoted to this task.

Positions and Qualifications of DMM Staff:

The Division Director oversees the daily operation of the Division and its staff, providing assistance and support to the staff in all areas. He is certified as a MSHA Instructor-Trainer and a U.S. Department of Interior-OSM Instructor.

The Special Projects Manager oversees the reclamation of orphaned land mine sites and the waiver programs for mining in designated jurisdictions. He does public speaking in workshops and conferences related to public education and training in mine safety, health, and environmental issues.

The Environmental Engineer Consultant provides operator assistance in permitting and environmental issues and reviews mining permits. He does public speaking at workshops and conferences on these processes and issues.

Two Mine Inspector Supervisors assist the inspection staff in successfully performing inspection and training duties by coordinating field staff and activities. Each is certified as a MSHA Instructor-Trainer, a General Mine Safety Instructor, and a Virginia-certified Surface Foreman. One is also a Virginia-certified First Responder and one is an Emergency Medical Technician.

Nine Instructor/Inspectors provide the safety, health, and reclamation inspections on Virginia mine sites and offer training in these areas, and assist with the certification program. Each is an inspector certified as a MSHA Instructor-Trainer,

General Mine Safety Instructor, Virginia-certified Surface Foreman, and Virginia-certified First Responder.

There is one Technical Instruction Supervisor responsible for training and certification programs. He is certified as a MSHA Instructor-Trainer; a Virginia Emergency Medical Technician Instructor; a Virginia and Federal Emergency Management and Emergency Planning Instructor; a Virginia and Federal Hazardous Materials Instructor; an American Heart Association CPR Instructor; an American Red Cross First Aid and CPR Instructor; and a National Safety Council First Aid Instructor. He is also OSHA-approved for instruction in Blood-borne Pathogens, Hazard Communication Standards, HazWOper, and also provides general mine safety training.

One Office Services Specialist spends half her time providing administrative and clerical support for the training and certification programs and answering questions and offering assistance to industry personnel training and certification programs.

Funding:

Training and education funding comes from the Commonwealth of Virginia's General Funds and an MSHA Grant. The latter supports the Technical Instruction Supervisor position and related administrative costs. Income is also received from certification examination fees for the cost of printing and maintaining certificates. (See next section for additional information.)

Equipment and Reference Material Available for Training Purposes Includes:

- A video-lending library consisting of more than 300 safety and health videos and slide presentations available to industry on a two-week rotating loan basis. A complete listing may be found at Appendix I.
- One satellite receiver with down-link and video recording capabilities.
- TV/VCR combination units for use by inspectors when providing training.
- Slide projector units for inspectors' use when providing training.
- Slide/sound projector units for inspectors' use when using slide/tape presentations.
- Video editing units capable of title and character generation on video tapes.
- Video camera units, both VHS and 8 mm for on-site videotaping by inspectors.

- Laptop computers and portable printers for each field inspector to improve communications and coordination of scheduling of training activities and pretraining assessments conducted on-site.
- 35 mm cameras assigned to each inspector.
- Certification materials include certification requirements; study guides for Surface Foreman, Surface Blaster, and Underground Blaster; examinations; and BMME forms.
- First Aid Pocket Guide for review of first aid principles and practices used for Foreman certification courses and the General Mineral Miner certification.

External Training Resources

State and Federal Government Resources Used by DMM:

- U.S. Department of Labor - Mine Safety and Health Administration - technical assistance in mine safety and health issues; information through computers and other media.
- National Mine Health and Safety Academy, Beckley, WV - for staff training and library and video resource; technical resource in general mine safety specific issues.
- Virginia Polytechnic Institute and State University, Blacksburg, VA - for technical assistance in mining-related issues and training.
- Community College System - classroom use for training.
- Other federal and state agencies - as needed for technical assistance.

Other Resources:

- National Mine Health and Safety Academy - first aid and other mine safety courses.
- American Red Cross - basic first aid courses.
- National Safety Council - basic eight-hour first aid courses.
- EMP America - Medic First Aid eight-hour courses.
- Virginia Polytechnic Institute and State University - continuing education and professional development courses.
- Virginia Community College network - first aid courses and other technical and professional development courses.

- Other state agencies.

Courses Available Through DMM

MSHA-Related Courses: Status

Annual Refresher - for underground and surface metal mines available
New Miner Training available
General Instructor available

Certification Courses:

Surface Foreman available 12/95
Surface Blaster available
Underground Blaster available
Surface Foreman Renewal available 3/96
Surface Blaster Renewal available 3/96
Basic 8-hour First Aid available
Underground Foreman Renewal available 3/96
Underground Blaster Renewal available 3/96
General Mineral Miner available 1/96

General Mine Safety Courses - Site-Specific With Pretraining Assessment:

Ground Control available
Mobile Equipment Safety available
Explosives/Blasting Safety available
Travelways available
Electrical Safety available
Person Protection and Safety Awareness available
Stationary Equipment Safety available
Mining and Personal Health available

Other Courses:

Hazard Communication - revised to meet federal requirements available
Emergency Response Planning available
Emergency Response Plan Implementation available
Hazardous Materials Awareness and Operations (HazWoper) available

Services:

Environmental Services available
Mined Land Reclamation available
Mine Safety Analysis available
Education and Training Assessment available
External Referral Services for Business and Productivity available

Revenues and Costs

The goal of the Division is to meet the education and training needs of its customers to the greatest extent possible. To determine how to best use its resources, an analysis of revenues and program costs was conducted. This section describes the Division's legal directives and provides an analysis of the annual estimates of the revenues (tuition and fees), instructional support costs, and other program costs.

Statutory Provisions

Section 45.1-161.49 of the Code of Virginia. An examination fee of \$10 will be paid by each person examined. The fees are paid into the Mineral Mining Examiner's Fund. The fund shall be used to pay compensation and expenses of the Board of Mineral Mining Examiners (BMME). The cost of printing certificates, forms, and other expenses incurred in conducting examinations and reviewing examination papers are also paid out of the fund.

Section 45.1-161.102 of the Code of Virginia. DMME may administer training programs for (i) assisting with the provision of selected requirements of the federal mine safety law and (ii) preparing miners for examinations administered by the BMME. The Department is authorized to charge reasonable fees to cover the costs of administering the training programs. The Director is not required to allocate more of the Department's resources to training programs than are appropriated or are otherwise available, or are collected from fees charged to attendees.

Cost and Revenue Estimates

Assumptions. The education and training services offered by DMM have traditionally been supported by appropriated funds and supplementary grants and awards. The \$10 examination fee is paid by each person who takes an examination for certification. No additional charges have been made for any education and training services. The cost and revenue estimates made herein are based on the assumption that all funds appropriated for training and education will be used to continue offering services without charge. Additionally, grants and other revenue sources will be pursued in preference to charging for services.

Resources available. Nine mine inspectors and two mine inspector supervisors are involved in education and training services as part of their job responsibilities. Approximately 25 percent of the time of these eleven employees is devoted to education and training. This translates into 605 work days per year, and \$158,000 in salaries and fringe benefits. (220 work days per year x 11 x 25 percent, and \$631,000 x 25 percent). Approximately \$30,000 per year is appropriated to support the education and training activities of these employees. (\$121,000 x 25 percent).

One technical training supervisor and one half of a clerical position are devoted full-time to education and training activities. These employees are funded in large part by a grant from the MSHA. Three hundred and thirty work days per year are available in these two administrative positions. (220 work days per year x 1.5). The cost of salaries and fringe benefits for these positions is \$50,000. Twenty-one thousand dollars is spent each year to support the education and training activities of these employees. Finally, the \$10 examination fee is collected each year from approximately 100 applicants for certification. Approximately \$1,000 is derived from the examination fee. Beginning in January 1996, an estimated \$6,000 in examination fees will also be generated from certification of approximately 300 new miners and 300 renewals of existing certificates.

A total of 935 work days (\$208,000 in salaries and fringe benefits) is available for education and training services. **Including operating costs, a total of \$265,000 is available from appropriations, grants, and fees to support the education and training of mineral miners.**

Training requirements of the federal mine safety law. 30 CFR, Part 48, contains the requirements for training and retraining of miners. The standards applicable to underground and surface miners are separate and distinct. The mandatory requirements for training plans, training of new miners, training of newly employed experienced miners, training of miners assigned to a task in which they have no previous experience, annual refresher training of miners, and hazard training is detailed in Part 48. The cost per course and the estimated annual cost for this training are:

TRAINING REQUIREMENTS OF FEDERAL MINE SAFETY LAW	INDIVIDUAL COSTS	ANNUAL COSTS
Training Plan*	\$225.00	\$2,250.00
Training of New Miners (16 hrs.)	1,200.00	
Training of Newly Employed Experienced Miners	N/A	
Training Miners Assigned to a Task in Which They Have No Previous Experience	N/A	
Annual Refresher Training of Miners (8 hrs.)	600.00	
Hazard Training	N/A	
General Instructor (24 hrs.)	\$1,600.00	\$1,600.00
TOTAL COSTS		\$3,850.00

* Ten plans, one course.

Preparing miners for examinations administered by the Board of Mineral Mining Examiners. Section 45.1-161.46 specifies the certifications that will be issued by the Board. Certification for additional tasks may be required by Board regulations.

The individual cost per class for providing the training to prepare miners for examinations administered by the Board are:

COURSE	INITIAL COST	RENEWAL COST
Surface Foreman	\$1,600.00	\$600.00
Surface Foreman Open Pit	\$1,600.00	\$600.00
Underground Foreman	N/A	N/A
Surface Blaster	\$1,000.00	\$600.00
Electrical Repairman	N/A	N/A
Underground Mining Blaster	\$800.00	\$600.00
General Mineral Miner	\$600.00	N/A

The estimated annual costs and revenues for preparing miners for examinations administered by the Board of Mineral Mining Examiners are:

COURSE	INITIAL		RENEWAL	
	COSTS	REVENUE	COSTS	REVENUE
Surface Foreman	\$4,800.00	\$450.00	\$7,200.00	\$1,800.00
Surface Foreman Open Pit		50.00		200.00
Underground Foreman				200.00
Surface Blaster	3,000.00	300.00	1,800.00	400.00
Electrical Repairman				
Underground Mining Blaster	1,600.00	150.00	600.00	50.00

General Mineral Miner	3,000.00	500.00		
TOTAL	\$12,400.00	\$1,450.00	\$9,600.00	\$2,650.00

Assumptions underlying estimates above:

Surface Foremen costs are based on 15 people per class and three classes annually, and revenues for renewals are based on 12 classes and 15 people per class for a total of 180 people annually.

Surface Foreman open pit costs are based on five miners attending class for initial certification and 20 miners taking renewal classes.

Surface Blaster costs for initial certification are based on 30 miners attending three classes, while renewal costs are estimated on 40 miners attending three classes.

It is estimated the Underground Blaster costs for initial certification be based on 15 miners taking two classes and the renewal costs on five miners taking one class.

General Mineral Miner classes are expected to require five classes for an estimated 50 miners.

Mineral Mining safety training. A program of voluntary safety talks for mineral miners is authorized under Section 45.1-161.104. The safety training may include topical training and talks conducted either on-site or in classrooms.

The individual costs for providing safety talks and other topical training, based on no increase from 1994 levels, are:

SAFETY TALKS	INDIVIDUAL COSTS	ANNUAL COSTS
Safety Talk On-Site (<8 Hrs.)*	\$400.00	\$85,200.00
Safety or Other Closely Related Topic (8 Hrs.)**	\$600.00	\$24,000.00
First Aid (8 Hrs.)***	\$600.00	\$ 7,200.00
TOTAL		\$116,400.00

Assumptions underlying estimates above:

* 213 classes taught on-site.

** 40 classes taught on-site.

***12 classes taught on-site.

Risk Assessment Program. The 1994 Mine Safety Act directs that DMM resources should be allocated to those mines where risks of injury are greater than the risks at other mines in the Commonwealth. A risk assessment tool was developed in mid-1994. To assist those mines with greater indicated risk, DMM will dedicate a significant portion of its education and training resources to them. At a minimum, at least two site visits will be made to these mines each year to offer services aimed at reducing accidents and injuries. Participation by the mines is voluntary, and it is expected that approximately 85 percent of the 90 mines will require education and training services. The estimated annual costs for providing education and training services to 77 mines identified through the risk assessment procedure is $77 \times 2 \text{ days} \times \$600 = \$92,400$.

SUMMARY OF EDUCATION AND TRAINING COSTS

Training to meet requirements of federal mine law.	\$3,850.00
Preparing miners for certification examinations.	22,000.00
Safety talks and other topical training.	116,400.00
E&T services aimed at reducing accidents at sites with greater risk.	92,400.00
Services, course development, and evaluation.	30,350.00
TOTAL E&T COSTS	\$265,000.00

Marketing and Implementation

DMM Customers

To help ensure the success of DMM's Education and Training Service, DMM's marketing efforts will reach not only its targeted customer groups but influential stakeholder groups as well. By keeping stakeholders informed, DMM will continue to garner their endorsement and support of the program. Therefore, a necessary component of DMM's marketing efforts will be the communication of various outcomes of the development, implementation and evaluation of the education and training services. These will include:

- Getting back to customers and stakeholders with the results of the needs assessment survey.
- Reporting on education and training services once underway - enrollment, distribution, marketing/promotional efforts.
- Providing results of evaluations of the services and marketing efforts.

Introduction of Services to Customers and Stakeholders

DMM will issue a memo to operators, contractors and other interested persons with an informational summary of the Education and Training Plan attached. The summary will provide background information on the goals, objectives, and strategies; benefits of using the services; and the industry survey results. A summary of the services and one catalog of the training courses will be distributed to each mine.

Marketing Activities: Tools, Mediums, Content and Targeting

The DMM will use a variety of marketing tools and mediums to communicate information about the Education and Training Service to DMM customers and stakeholders. As demonstrated by the needs assessment evaluation process,

one of the most effective means of communication is one-on-one contact between DMM staff and their customers. Although effective, it is an obviously limited and labor intensive means of marketing the services; and while the value of such direct communications should not be overlooked or underestimated, DMM will need to use those tools and mediums that will enable it to efficiently and effectively reach the largest audience possible. These may include the following:

- *Site Visits by DMM Staff:* One-on-one with mine operators and employees to promote and encourage participation in the education and training service, with special emphasis placed on those mines with higher accident/injury rates. DMM staff will have print materials available to introduce the customer to the program. Inspector/Instructor site visits and customized literature will be used to effectively market services customized to meet the needs of individual mines.
- *Mineral Mining Bulletin:* Increase frequency of publication and expand focus on education and training activities, opportunities, and benefits. Advertise training opportunities, when timely, and include information on customer feedback from customers' needs assessment evaluations. Feature articles on training innovations, new technology, accident/injury trends, and mines that achieve low lost-time injury rates.
- *Memos to Operators:* Develop a special memo with eye-catching masthead to convey information on training opportunities (scheduling, etc.) that may accompany the more formal policy memorandums to operators, or be mailed alone.
- *Brochures, flyers, catalog:* Information on the Education and Training Service will be available to DMM customers and stakeholders via a complete copy of the Education and Training Plan, a summary of the Plan which will be tailored for customers of the Education and Training Service, and a catalog of mine safety, first-aid, and reclamation course offerings. In addition, brochures or flyers will be developed to address specific categories of training, i.e., customized, on-site training services; customer assistance in obtaining nontraditional education and training from external sources; federally required mine safety training; certification training; environmental compliance; and new technologies and products.
- *Mine Safety Posters:* In addition to the mine safety slogan and poster award program, posters will be developed to promote safe mining practices, list training courses and schedules, contacts, etc.
- *News Mediums:* Market and promote the program through newspaper articles, television news feature stories, radio spots, articles placed in industry publications (Virginia Aggregates Association newsletter, *Pit & Quarry*, *Construction* and other industry magazines). Local newspapers

will be used to advertise certification training opportunities where appropriate. Feature articles telling "success stories" concerning reduced injuries and workers' compensation costs and other benefits experienced by education and training participants can be used to market the services. Such features will be most useful when published in newspapers circulated in areas with significant mineral mining activity.

- *Program Endorsements:* Seek public endorsement of the program by the Governor and/or Secretary of Commerce and Trade, the Federal Mine Safety and Health Administration, the Virginia Aggregates Association, and the Interstate Mining Compact Commission. The most effective endorsement will come from satisfied customers who have taken advantage of and benefited from the services.

Scheduling Ongoing Marketing Activities

The DMM will establish an annual marketing schedule each spring for the ensuing fiscal year with assistance from the DMME Public Relations Coordinator to identify and prioritize marketing activities. The schedule will describe individual marketing initiatives and establish time lines needed to execute each initiative, allowing for necessary review, approval, procurement, and production activities.

Professional Development

The professional development of DMM personnel is an integral component of the E&T Service. Professional development direction is derived from the assessed needs of DMM customers and the selected service strategies. The following is the professional development procedure for staff.

Purpose

To create and implement a professional development plan which enhances the capabilities of the DMM training staff to meet the needs of our customers in the areas of education, training, and consultative services.

Values

- Provide each staff member with the assistance necessary to allow them to develop the knowledge, skills, and abilities to deliver quality services.
- Dedicate ourselves to obtaining new knowledge, skills, and abilities necessary to meet the changing needs of our customers.
- Go beyond normal duties to help other DMM staff by providing assistance and advice helpful in achieving quality training and consultative services.

- Remain open and flexible to accepting change in educational and training opportunities.

Goal

To prepare staff to deliver DMM services to our customers in a knowledgeable, skillful, and professional manner.

Procedure

I. Analysis of Individual Strengths and Weaknesses

A. Basic Requirements for DMM E&T personnel:

1. Presentation Skills

- a. Principles of instruction in adult education.
- b. Professional presentation skills.
- c. Training the instructor (MSHA instructor training).

2. Technical Skills and Knowledge

a. Mine safety.

- 1) Electricity.
- 2) Explosives.
- 3) Fire prevention, control, investigation.
- 4) Ground control/geology.
- 5) Mobile equipment.

b. Personal health and safety.

- 1) Ergonomics.
- 2) First aid/first responder.
- 3) Hazard communication.
- 4) Hazardous materials training.
- 5) Industrial hygiene.

c. Inspection and investigation techniques

- 1) Accident prevention.
- 2) Accident investigation.
- 3) Complaint investigation.
- 4) Computer/automated systems.
- 5) Emergency response planning/action.

d. Environment and reclamation.

- 1) Engineering principles.

- 2) Environmental toxicities.
- 3) Environmental resource management.
- 4) Revegetation/restoration.

3. Consulting Skills.

- a. Motivation of customers
- b. Situation analysis/evaluation.
- c. Negotiation/contract management.

4. Certification Requirements

- a. MSHA instructor trainer certification.
- b. Mine inspector certification.
- c. Surface foreman certification.
- d. Relevant professional and job related certifications.
- e. First responder certification.

B. Evaluate Current Level of Knowledge and Competency of Staff

1. Develop and distribute questionnaires to staff.
2. Supervisory evaluation of questionnaires to determine staff needs.
3. Provide recommendation and review with each staff member.

II. Training Provided as Determined by Technical Instruction Supervisor, Mine Inspector Supervisors, and Other Individuals

- A. Needs assessment results are used to determine customer-oriented training requirements.
- B. Results of a professional development questionnaire are used to determine what additional knowledge, skills, and abilities are needed by each staff member.
- C. Sources of training are identified to meet customer and individual needs.
- D. Individualized professional development plans are developed for each staff member.
- E. Professional development plans are reviewed and updated annually.

III. Process for Implementation

- A. Technical Instruction Supervisor schedules and coordinates the training activities of all staff members.

- B. Technical Instruction Supervisor and supervisors monitor and track the progress of individual staff members through their plan.

Supervisors:

1. Participate in classes with staff.
2. Conduct training sessions for staff.
3. Track progress by using individual status sheets and evaluation forms.

IV. Evaluation

- A. Technical Instruction Supervisor and Mine Inspector Supervisors monitor the performance of instructors to ensure that they have gained the level of knowledge, skills, and abilities needed to deliver training and consultative services.
- B. Mine Inspector Supervisors, with input from customers, evaluate staff members as part of their performance evaluation.
- C. Technical Instruction Supervisor and Mine Inspector Supervisors hold field meetings to promote consistency and quality in professional performance.

The form used in the professional development plan may be found at Appendix K.

SERVICE EVALUATION AND PERFORMANCE MEASUREMENT

Evaluation of the Education and Training Service is critical to the success of the program. It will enable the Division to determine if it is meeting the needs of its customers, modify the service, and shift resources where indicated.

The Division has established a plan for meeting the goals and objectives of the service, as outlined below.

Goal I. Eliminate accidents, injuries and fatalities and their corresponding costs.

Objective A. To provide training required by the Federal Mine Safety Act.

Data Collected

- Information on what was requested and provided by the customer.
- Completed education and training service evaluations.
- Assessment of knowledge level of participants before and after training.
- Risk survey information.
- Data collected from company accident records, training records, DMM and MSHA statistics, and including violation history where available.

Data Outputs

- Descriptive summary of services provided to and by the customer group.
- Noted changes in level of comprehension and knowledge of participants.
- Customer evaluation of education and training services as they meet MSHA requirements.
- Ways to change and improve services in the future.
- Numbers and types of violations and accidents which occur after training by the individuals and the operation.

Key Result Areas

- Changes in participants' knowledge.
- Changes in rate of accidents, injuries, fatalities.

- Changes in rate of violations issued and nature of violations.
- Changes in quality of Education and Training services provided by DMM staff.
- DMM responsiveness to customer requests.

Objective B. To provide training for persons seeking to obtain or maintain certification.

Data Collected

- Information from customers and from the certification database.
- Education and training evaluations.
- Cost to DMM to provide service.
- Data collected on accidents, injuries and fatalities in Virginia.
- Data on violations, closure orders, and penalties in Virginia.

Data Outputs

- Profile of customers.
- Descriptive summary of services.
- Cost of service provided.
- Evaluation of quality of education and training service.
- Customer suggestions for ways to improve or change services in the future.
- Numbers and types of violations and accidents involving participants as shown in statewide trends.

Key Result Areas

- Cost per unit for service provided.
- Change in quality of education and training provided.
- Changes in violations, accidents and other incidents involving certified persons.

Objective C. To improve customer knowledge and awareness of the hazards on mine sites and provide other traditional training requested by customers not mentioned in Objectives A or B.

Data Collected

- Names of customer; topic(s) requested; teaching methods, materials, and equipment employed.
- Completed education and training service evaluations.
- Assessment of knowledge level of participants before and after training.
- Risk survey information.
- Data collected on accidents, injuries, and fatalities.
- Cost to DMM and customer to provide service.

Data Outputs

- Summary of services provided to customers.
- Changes in levels of comprehension, knowledge, and behavior of customers.
- Evaluation of quality of education and training.
- Ways to change or improve service in the future.
- Effects of education and training on risk reduction and number and type of accidents, injuries, and fatalities.
- Total cost of service provided.

Key Result Areas

- Changes in comprehension and knowledge.
- Changes in participant's behavior.
- Changes in rate of accidents, injuries, and fatalities.
- Cost-effectiveness of service provided.

Goal II. Promote sound environmental practices at mineral mines.

Objective A. To improve the environmental knowledge and awareness of customers.

Data Collected

- Information on what was requested and provided to the customer.
- Cost to DMM of providing services.
- Knowledge level of participant provided service.
- Information for reclamation and environmental hazards.
- Data on violations issued by DMM.
- Customer evaluation of services provided.

Data Outputs

- Profile of customer.
- Descriptive summary of services.
- Total cost of services provided.
- Change in level of knowledge and behavior of customers.
- Evaluation of quality of services provided.
- Customer suggestions for changing or improving services in the future.
- Numbers and types of violations incurred after services are provided.

Result Areas

- Cost per unit of service.
- Changes in participant's knowledge.
- Changes in customer's behavior.
- Change in content and quality of education and training services.
- DMM responsiveness to customer groups.
- Reduction in violations and environmental impact and hazards.

Objective B. To provide services that encourage cost-effective environmental compliance.

Data Collected

- Information on what was requested and provided to the customer.

- Cost to DMM of providing services.
- Knowledge level of participant.
- Current environmental practices and costs.
- Estimated cost to participants to perform work as suggested.
- Actual cost of work performed.
- Data on violations issued by DMM.

Data Outputs

- Profile of customer.
- Descriptive summary of services.
- Total cost of services provided.
- Change in level of knowledge and behavior of customers.
- Evaluation of quality of services provided.
- Numbers and types of violations incurred after services provided.
- Total cost to perform work as suggested.

Key Result Areas

- Cost-effectiveness of services provided to operator.
- Cost per unit of service for DMM.
- Changes in participant knowledge.
- Change in quality of services.
- DMM responsiveness to customer groups.
- Reduction in violations and environmental impact and hazards.

Goal III. Enhance education and training opportunities in the mineral mining industry.

Objective A. To help customers in obtaining nontraditional education and training from external sources.

Data Collected

- Information on what was requested by the customer.
- Customer's evaluations of the services provided by DMM and the training/services provider.
- Service provider's evaluation of their success in meeting the customer's needs.
- Cost of services or training provided.

Data Outputs

- Profile of customers.
- Profile of service provider.
- Descriptive summary of services provided to customers.
- Suggestions for changing or improving the service in the future.
- Total cost of services provided.
- Evaluation of quality of service provided by DMM and provider.

Key Result Area

- DMM responsiveness to customer.
- Cost-effectiveness of services provided.
- Customer satisfaction with services provided.
- Changes in service delivery.

Objective B. To provide quality, customized education and training services on-site, to all customers requesting it.

Data Collected

- Information on what is requested by the customer.
- Evaluation of services and customer responses.
- Cost of services provided by DMM.
- Data on workers' compensation, productivity, and loss control.
- Data on cost of environmental compliance.

- Data on accidents, injuries, and violations.
- Risk assessment information.

Data Outputs

- Profile of customers and customer groups.
- Description of services provided.
- Suggestions for changing or improving services in the future.
- Numbers and types of violations and accidents involving participants.
- Customer evaluation of education and training service.
- Summary of operational costs; environmental compliance, workers' compensation, productivity, and loss control.

Key Result Areas

- Changes in violations and accidents involving participants.
- Changes in operational costs.
- Change in quality of education and training services.
- DMM responsiveness to customers and customer groups.

Goal IV. Effectively administer the Education and Training Plan and Service for customers of the DMM.

Objective A. To continuously evaluate and update it to reflect changes in technology, laws and regulations, and the needs of the mineral mining industry.

Data Collected

- Evaluations of key result areas.
- Data collected in the area of technology, law and regulatory changes.
- Special issues revealed indirectly during providing of services.
- Cost of providing new services.
- Knowledge and skills of DMM providers and industry.
- Special issues or needs identified by customers.

Data Outputs

- Summary of key result areas.
- Analysis of new or modified services.
- Identify discrepancies in the knowledge and skills of DMM providers and industry.

Key Result Areas

- Change services to increase participants' knowledge.
- Change quality of education and training services.
- Cost-effectiveness of services and pay back to customers.

Objective B. To provide for professional staff development.

Data Collected

- Results from performance evaluations.
- Review of Professional Development Plan.
- Staff evaluations from classes and training taken.
- Assessment of knowledge and skill level of staff before and after training.
- Cost of classes and training obtained by staff.

Data Outputs

- Descriptive summary of classes and training provided to staff.
- Noted changes in level of knowledge and skill of staff.
- A cumulative evaluation summary of staff from supervisors and training participants.
- Staff evaluation of Professional Development Plan in meeting their needs.
- Ways to change and improve the Professional Development Plan.
- Total costs of classes and training obtained by staff.

Key Result Areas

- Changes in participants' knowledge and skills.

- Changes in quality of classes and training obtained for staff.
- Changes in evaluation of staff's professional capabilities.
- Responsiveness of supervision in obtaining needed training.
- Cost-effectiveness of training obtained.

Objective C. To ensure sufficient resources are available.

Data Collected

- Summary of providing current and new services.
- New services as identified in continuous evaluation of E & T Plan.
- DMM budget information.
- Workload analysis (office/field - mandates vs. customer requests.)
- Other sources of customer funds and other resources.

Data Outputs

- Summary of data inputs.
- List of services that could be provided with other resources.

Key Result Areas

- A focused, prioritized training program.
- DMM responsiveness to customers.
- Maintaining cost-effectiveness of education and training provided by DMM staff.

Objective D. To evaluate DMM's marketing efforts.

Data Collected

- Information disseminated and method used.
- Requests received and E & T services provided.
- Information on customers.
- Survey of customer groups.
- Complaints and inquiries.

Data Outputs

- Requests compared to marketing efforts.
- Profile of customers.
- Results of survey.
- Summary of complaints and inquiries.

Key Result Areas

- Profile of customers.
- Reaching all targeted customers.
- Effectively communicating benefits of services.
- Providing information on a timely basis.
- Using the most effective mediums, methods, and resources.

APPENDIX

- A—Customer Needs Assessment for Small Operators
- B—Customer Needs Assessment for Large Operators
- C—Customer Needs Assessment for Safety and Environmental Directors
- D—Customer Needs Assessment for Speciality Mines
- E—Customer Needs Assessment for Mineral Mine Workers
- F—Customer Needs Assessment for Independent Contractors
- G—Customer Needs Assessment for DMM Stakeholders
- H—Findings by Customer Group
- I—Lesson Plans for Courses
- J—Listing of Safety and Health Videos and Slide Presentations
- K—Personal Development Plan for DMM Instructors
- L—Cost Analysis for Training
- M—Education and Training Assessment Service Form